WHAT IS CLAIMED IS:

Sub B1

1. An electrosurgical apparatus for resecting and ablating tissue at a target site, comprising:

a shaft having a shaft distal end portion and a shaft proximal end portion; and

a resection unit located at the shaft distal end portion, the resection unit including a resection electrode support and at least one resection electrode arranged on the resection electrode support, wherein the at least one resection electrode is capable of mechanically severing the tissue at the target site and the at least one resection electrode is further capable of generating a plasma from an electrically conductive fluid and ablating the tissue via a cool ablation mechanism, wherein the tissue at the target site is exposed to a temperature not exceeding 90° C.

2. The electrosurgical apparatus of claim 1, wherein each of the at least one resection electrodes comprises a resection electrode head.

3. The electrosurgical apparatus of claim 2, wherein the resection electrode support protrudes from an external surface of the shaft.

4. The electrosurgical apparatus of claim 1, wherein the resection electrode support is arranged laterally or terminally on the shaft distal end portion.

5. The electrosurgical apparatus of claim 1, wherein an arrangement of the resection electrode support on the shaft distal end portion is selected from the group consisting of protruding from a shaft external surface and recessed within the shaft external surface.

6. The electrosurgical apparatus of claim 1, wherein the shaft distal end portion includes a cavity, and the resection electrode support is arranged in the cavity.

7. The electrosurgical apparatus of claim 1, wherein the shaft distal end portion includes a curve.

8. The electrosurgical apparatus of claim 2, wherein the resection electrode head protrudes from an external surface of the shaft by a distance in the range of from about 0.1 to about 20 mm.

9. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a wire or a blade.

10. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a wire having a cross-sectional shape selected from the group consisting of substantially round, substantially square, and substantially triangular.

11. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a wire having a cross-sectional shape including at least one cusp.

12. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a serrated wire.

Sub G4

13. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a wire having a cutting edge.

14. The electrosurgical apparatus of claim 13, wherein the cutting edge is serrated.

15. The electrosurgical apparatus of claim 13, wherein the resection electrode head comprises a wire having an insulating layer disposed on a covered portion of the wire, wherein the covered portion of the wire excludes the cutting edge.

16. The electrosurgical apparatus of claim 2, wherein the resection electrode head comprises a material selected from the group consisting of: tungsten, stainless steel alloys, platinum or its alloys, titanium or its alloys, molybdenum or its alloys, and nickel or its alloys.

17. The electrosurgical apparatus of claim 1, wherein the resection unit includes a plurality of resection electrode heads.

18. The electrosurgical apparatus of claim 17, wherein the plurality of resection electrode heads are capable of mechanically resecting tissue to provide a plurality of resected tissue fragments, and the plurality of resection electrode heads are further capable of electrically ablating the resected tissue fragments.

19. The electrosurgical apparatus of claim 17, wherein the plurality of resection electrode heads comprise at least one resection electrode array.

20. The electrosurgical apparatus of claim 19, wherein the at least one resection electrode array comprises a plurality of resection electrode heads arranged substantially parallel to each other.

Sub A5

21. The electrosurgical apparatus of claim 17, wherein the plurality of resection electrode heads comprise a first resection electrode head array and a second resection electrode head array, wherein the first resection electrode head array is arranged at an angle to the longitudinal axis of the resection unit in the range of from about 105° to about 165°, and the second resection electrode head array is arranged at an angle to the longitudinal axis of the resection unit in the range of from about 15° to about 75°.

22. The electrosurgical apparatus of claim 2, further comprising a return electrode, wherein the at least one resection electrode head is coupled to a high frequency power supply for applying a high frequency voltage to the at least one resection electrode head, and the at least one resection electrode head is adapted to provide a high current density in the vicinity of the at least one resection electrode head upon application of a high frequency voltage between the at least one resection electrode head and the return electrode.

23. The electrosurgical apparatus of claim 22, wherein the high frequency voltage is characterized as having a peak-to-peak voltage in the range of from

about 10 to 2000 volts, a RMS voltage in the range of from about 5 to 1000 volts, and a frequency in the range of from about 5 KHz to 20 MHz.

Sub A6

24. The electrosurgical apparatus of claim 2, further comprising a return electrode, wherein the resection electrode head is adapted to promote generation of a plasma in the vicinity of the resection electrode head upon application of a high frequency voltage between the at least one resection electrode and the return electrode, and the plasma causes molecular dissociation of high molecular weight tissue components to yield low molecular weight ablation by-products.

25. The electrosurgical apparatus of claim 1, wherein the resection electrode support is disposed on a return electrode, and the resection electrode support electrically insulates the at least one resection electrode from the return electrode.

Sub B

A7

26. The electrosurgical apparatus of claim 1, further comprising at least one digestion electrode, wherein the at least one digestion electrode is coupled to a high frequency power supply, and the at least one digestion electrode is capable of aggressive ablation of tissue fragments.

27. The electrosurgical apparatus of claim 1, further comprising at least one fluid delivery port for delivering an electrically conductive fluid to the resection unit or to the target site.

28. The electrosurgical apparatus of claim 27, wherein the at least one fluid delivery port comprises a slit at least partially surrounding the resection unit.

29. The electrosurgical apparatus of claim 27, wherein the at least one fluid delivery port comprises a plurality of fluid delivery ports at least partially surrounding the resection unit.

30. The electrosurgical apparatus of claim 27, wherein the at least one fluid delivery port completely surrounds the resection electrode support.

31. The electrosurgical apparatus of claim 27, wherein the at least one fluid delivery port is located within a return electrode.

32. The electrosurgical apparatus of claim 1, further comprising at least one aspiration port coupled to an aspiration lumen, the aspiration lumen disposed within the shaft.

33. The electrosurgical apparatus of claim 32, wherein the at least one aspiration port is located on an external surface of the shaft at a distance of from about 5mm to about 50 mm proximal to the resection electrode support.

34. The electrosurgical apparatus of claim 32, further comprising at least one digestion electrode arranged within the aspiration lumen, the at least one digestion electrode coupled to a high frequency power supply for supplying a high frequency voltage to the at least one digestion electrode, the aspiration lumen serving as a conduit for removal of excess fluids and resected tissue fragments from the target site, and the at least one digestion electrode capable of breaking down the resected tissue fragments within the aspiration lumen to yield low molecular weight ablation by-products, wherein the resected tissue fragments are removed from the target site.

35. The electrosurgical apparatus of claim 26, wherein the at least one digestion electrode comprises a plurality of digestion electrodes.

36. The electrosurgical apparatus of claim 35, wherein the plurality of digestion electrodes at least partially interweave with each other.

37. The electrosurgical apparatus of claim 27, wherein the at least one fluid delivery port delivers an electrically conductive fluid in a plurality of directions such that the electrically conductive fluid immerses the at least one resection electrode.

38. The electrosurgical apparatus of claim 1, wherein the at least one resection electrode is coupled to a high frequency power supply for delivering a high frequency voltage between the at least one resection electrode and a return electrode,

wherein the high frequency voltage is sufficient to ablate at least a portion of the tissue at the target site, and the tissue ablated at the target site is exposed to a temperature in the range of from about 45° to 90° C.

39. The electrosurgical apparatus of claim 1, wherein the resection electrode support electrically insulates the at least one resection electrode from the return electrode.

40. The electrosurgical apparatus of claim 1, wherein the resection electrode support member comprises a material selected from the group consisting of a glass, a ceramic, a silicone, a urethane, a polyurethane, a polyimide, silicon nitride, teflon, and alumina.

41. An electrosurgical instrument for resecting and ablating tissue at a target site, comprising:

a shaft having a shaft distal end portion and a shaft proximal end portion;

a resection unit located at the shaft distal end portion, the resection unit including a resection electrode support and a plurality of resection electrode heads arranged on the resection electrode support;

an aspiration device including at least one aspiration port proximal to the resection unit and an aspiration lumen coupled to the at least one aspiration port; and

at least one digestion electrode arranged on the aspiration device.

42. The electrosurgical instrument of claim 41, wherein each of the plurality of resection electrode heads comprises a wire loop or a blade.

43. The electrosurgical instrument of claim 41, wherein the aspiration device accommodates an aspiration stream including excess fluids and resected tissue fragments, the at least one digestion electrode arranged within the aspiration lumen and coupled to a high frequency power supply, and the at least one digestion electrode adapted for aggressive ablation of the resected tissue fragments.

44. The electrosurgical instrument of claim 41, further comprising an electrically insulating sleeve covering the shaft to a position proximal of the resection unit.

45. The electrosurgical instrument of claim 41, further comprising a fluid delivery lumen leading to at least one fluid delivery port disposed adjacent to the resection electrode support.

46. The electrosurgical instrument of claim 45, further comprising a return electrode disposed on the shaft distal end portion, wherein the at least one fluid delivery port delivers an electrically conductive fluid to provide a current flow path between the return electrode and the plurality of resection electrode heads.

47. The electrosurgical instrument of claim 46, wherein each of the at least one fluid delivery port delivers the electrically conductive fluid towards the plurality of resection electrode heads, and the plurality of resection electrode heads generate a plasma from the electrically conductive fluid upon application of a high frequency voltage to the plurality of resection electrode heads, and the plasma causes molecular dissociation of the tissue at a temperature in the range of from about 45° to 90° C.

48. The electrosurgical instrument of claim 41, wherein each of the plurality of resection electrode heads includes a surface geometry configured to promote substantially high electric field intensities in the vicinity of the plurality of resection electrode heads when a high frequency voltage is applied to the plurality of resection electrode heads, wherein the high frequency voltage is characterized by a peak-to-peak voltage in the range of from about 10 to 2000 volts, a RMS voltage in the range of from about 5 to 1000 volts, and a frequency in the range of from about 5 KHz to 20 MHz, and the electric field intensities are sufficient to vaporize an electrically conductive fluid in contact with the plurality of resection electrode heads.

49. The electrosurgical instrument of claim 41, further comprising a return electrode, the resection electrode support disposed on the return electrode.

50. The electrosurgical instrument of claim 49, wherein the plurality of

resection electrode heads and the return electrode are configured such that, upon the application of a suitable high frequency voltage therebetween, an electrically conductive fluid is vaporized in a thin vapor layer over at least a portion of the resection unit and energy is discharged from the vapor layer resulting in molecular dissociation of tissue at the target site.

51. A method of removing tissue at a target site of a patient, comprising:

a) advancing a shaft distal end portion of an electrosurgical probe towards the target site, the shaft distal end portion having a resection unit disposed thereon, the resection unit including at least one resection electrode head adapted for mechanically severing body tissue components and the at least one resection electrode head further adapted for effecting molecular dissociation of body tissue components to form low molecular weight ablation by-products, wherein the body tissue components are exposed to a temperature not exceeding 90° C ; and

b) applying a high frequency voltage between the at least one resection electrode head and a return electrode.

52. The method of claim 51, further comprising:

c) contacting the tissue at the target site with the at least one resection electrode head, such that the tissue at the target site is removed by at least one mechanism selected from the group consisting of mechanical resection and molecular dissociation.

53. The method of claim 52, further comprising:

d) concurrently with said step c), exerting a mechanical force on the at least one resection electrode head such that pressure is exerted by the at least one resection electrode head on the tissue at the target site, wherein the mechanical force exerted results in resection of at least a portion of the tissue at the target site to form resected tissue fragments.

54. The method of claim 53, wherein at least a portion of the resected tissue fragments undergo molecular dissociation as a result of said step b) to yield low molecular weight ablation by-products.

55. The method of claim 53, further comprising:

e) during said steps b), c), and d), moving the at least one resection electrode head with respect to the tissue at the target site.

56. The method of claim 53, wherein the shaft further includes an aspiration lumen having at least one digestion electrode disposed therein, and the method further comprises:

f) aspirating the resected tissue fragments into the aspiration lumen; and

g) applying a high frequency voltage to the at least one digestion electrode such that components of the resected tissue fragments undergo molecular dissociation within the aspiration lumen.

57. The method of claim 55, wherein said step e) comprises moving the at least one resection electrode head in a direction substantially perpendicular to a direction of the mechanical force exerted.

58. The method of claim 55, wherein said step e) comprises moving the at least one resection electrode head in a direction substantially parallel to a surface of the tissue at the target site.

59. The method of claim 55, further comprising:

h) successively repeating said step e) until an appropriate volume of tissue has been removed from the target site.

Sub A10

60. The method of claim 51, further comprising:

i) delivering an electrically conductive fluid to the target site.

61. The method of claim 51, wherein the target site is aspirated by a vacuum source coupled to at least one aspiration port, wherein the at least one aspiration port is located a distance of from about 5mm to about 50 mm proximal to the resection unit.

62. The method of claim 51, wherein the at least one resection electrode head comprises a plurality of resection electrode heads arranged on the resection unit as a resection electrode head array.

63. The method of claim 51, wherein the at least one resection electrode head is coupled to a power supply, the power supply applies a high frequency voltage to the at least one resection electrode head, the at least one resection electrode head promotes a high current density thereat in response to the applied high frequency voltage, the at least one resection electrode head is in contact with an electrically conductive fluid, and application of the high frequency voltage generates a plasma from the electrically conductive fluid.

64. The method of claim 63, wherein the plasma causes molecular dissociation of tissue components at the target site, and the molecular dissociation of the tissue components results in ablation of the tissue at the target site.

65. The method of claim 60, wherein said step i) comprises delivering the electrically conductive fluid via at least one fluid delivery port.

66. The method of claim 65, wherein the at least one fluid delivery port comprises at least one slit, the at least one slit at least partially surrounding the resection unit.

67. The method of claim 65, wherein the at least one fluid delivery port comprises a plurality of fluid delivery ports at least partially surrounding the resection unit.

68. The method of claim 60, wherein said step i) comprises immersing the at least one resection electrode head in the electrically conductive fluid.

69. The method of claim 51, wherein said step b) comprises applying sufficient voltage to the at least one resection electrode in the presence of an electrically

conductive fluid to vaporize at least a portion of the electrically conductive fluid between the at least one resection electrode and the tissue at the target site.

70. The method of claim 69, further comprising accelerating charged particles from the vaporized fluid to the tissue to cause molecular dissociation of tissue components at the target site.

71. A surgical kit, comprising:

an electrosurgical probe for removing tissue at a target site, the probe comprising at least one resection electrode head mounted on a resection electrode support;

a package for housing the probe, and

an instructions for use of the probe, the instructions for use comprising instructions on: adjusting a voltage level of a high frequency power supply to a voltage sufficient to remove tissue at a target site, connecting the probe to the high frequency power supply, positioning the at least one resection electrode head within an electrically conductive fluid at or near the tissue at the target site, and activating the high frequency power supply.

72. The surgical kit of claim 71, wherein the electrosurgical probe further comprises a fluid delivery device comprising at least one fluid delivery port for delivering an electrically conductive fluid to the at least one resection electrode head, wherein the at least one fluid delivery port substantially surrounds the at least one resection electrode head.

73. The surgical kit of claim 72, wherein the electrosurgical probe further comprises at least one digestion electrode disposed within the fluid delivery device and coupled to the high frequency power supply.

74. The surgical kit of claim 72, wherein the instructions for use further comprise instructions for delivering the electrically conductive fluid to the target site.

Sub A11

75. A method of making an electrosurgical resection and ablation probe, comprising:

a) providing a shaft including a shaft distal end and a shaft proximal end, the shaft distal end having at least one resection unit thereon, the at least one resection unit including a resection electrode support and at least one resection electrode head, wherein the at least one resection electrode head is adapted for mechanical resection of tissue and for effecting molecular dissociation of tissue components via a cool ablation procedure at a temperature not exceeding 90° C;

b) providing a handle; and

c) affixing the handle to the shaft.

76. The method of claim 75, wherein said step a) comprises providing a shaft having at least one aspiration port coupled to an aspiration lumen, wherein the at least one aspiration port is located proximal to the at least one resection unit, and the aspiration lumen is disposed within the shaft.

77. The method of claim 76, wherein said step a) comprises providing a shaft having at least one digestion electrode adapted for digesting resected tissue fragments suspended in an electrically conductive fluid, wherein the at least one digestion electrode is disposed within the aspiration lumen.

78. The method of claim 77, wherein said step b) comprises providing a handle having a connection block, the at least one digestion electrode and the at least one resection electrode head are coupled to the connection block, and the connection block is adapted for coupling the at least one digestion electrode and the at least one resection electrode head to a high frequency power supply.

79. The method of claim 76, wherein the shaft includes a plurality of digestion electrodes arranged within the aspiration lumen.

80. The method of claim 75, further comprising the step of:

d) encasing a proximal portion of the shaft within an insulating sleeve to provide a distal exposed portion of the shaft, wherein the distal exposed portion of the shaft defines a return electrode.

81. The method of claim 80, wherein said step a) comprises providing a shaft having the at least one resection unit disposed on the return electrode.

82. The method of claim 75, wherein said step a) comprises providing a shaft having at least one fluid delivery port coupled to a fluid delivery lumen, wherein the at least one fluid delivery port at least partially surrounds the at least one resection unit.

83. The method of claim 75, wherein said step a) comprises providing a shaft wherein the at least one resection unit includes a resection electrode support and the at least one resection electrode head comprises a plurality of resection electrode heads arranged on the resection electrode support, wherein each of the plurality of resection electrode heads comprises a wire or a blade.

Sub a12

84. The method of claim 75, wherein the shaft includes at least one digestion electrode, and the handle includes a connection block for coupling the probe to a high frequency power supply, and the method further comprises:

e) coupling the at least one resection electrode to the connection block; and

f) coupling the at least one digestion electrode to the connection block.

85. The method of claim 75, wherein the at least one resection electrode head includes a cutting edge and a covered portion, the covered portion having an insulating layer disposed thereon.

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